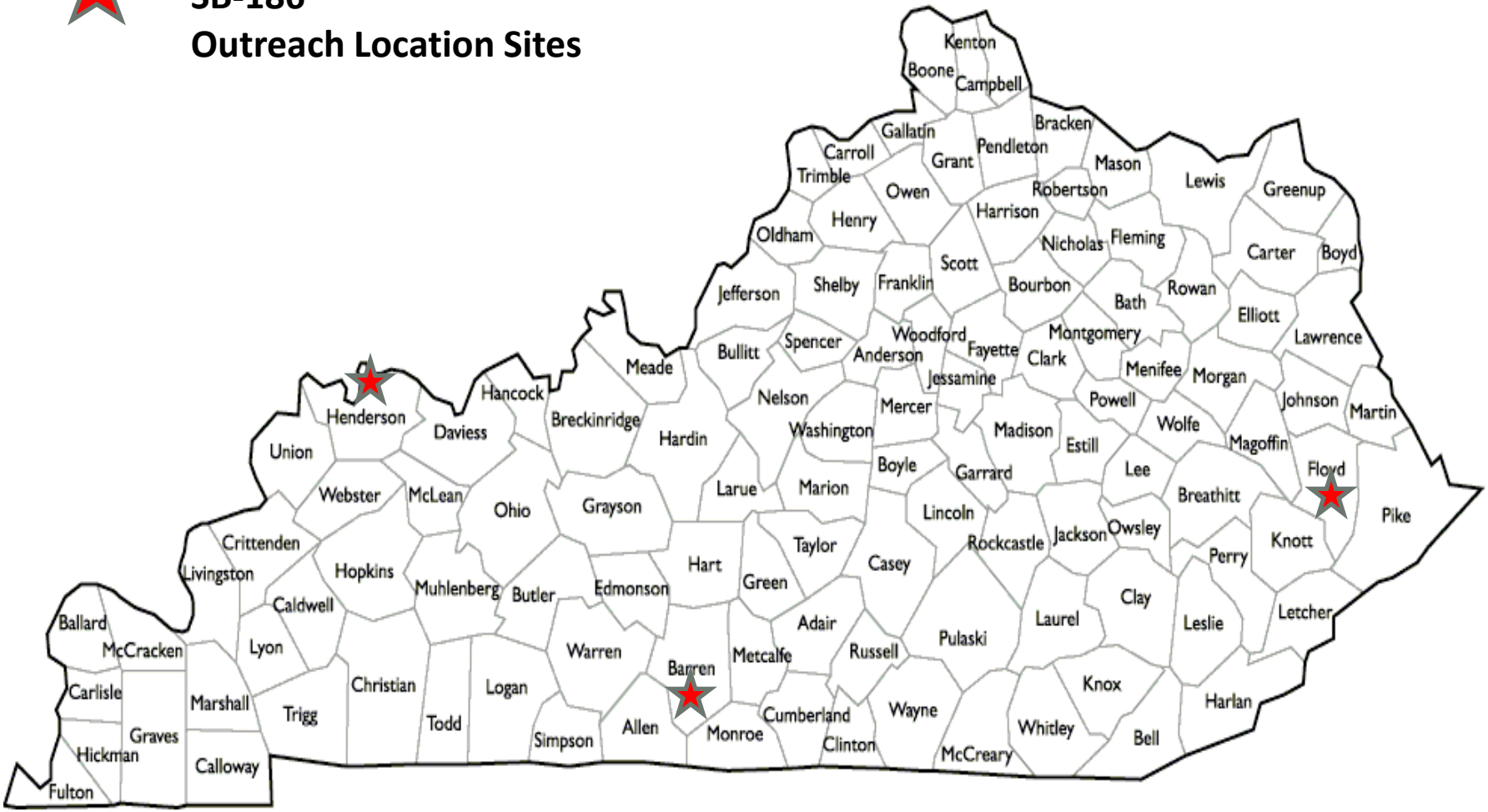
Oil & Gas Modernization Act
Senate Bill 186

Effective June 24, 2015

Division of Water

Division of Oil & Gas

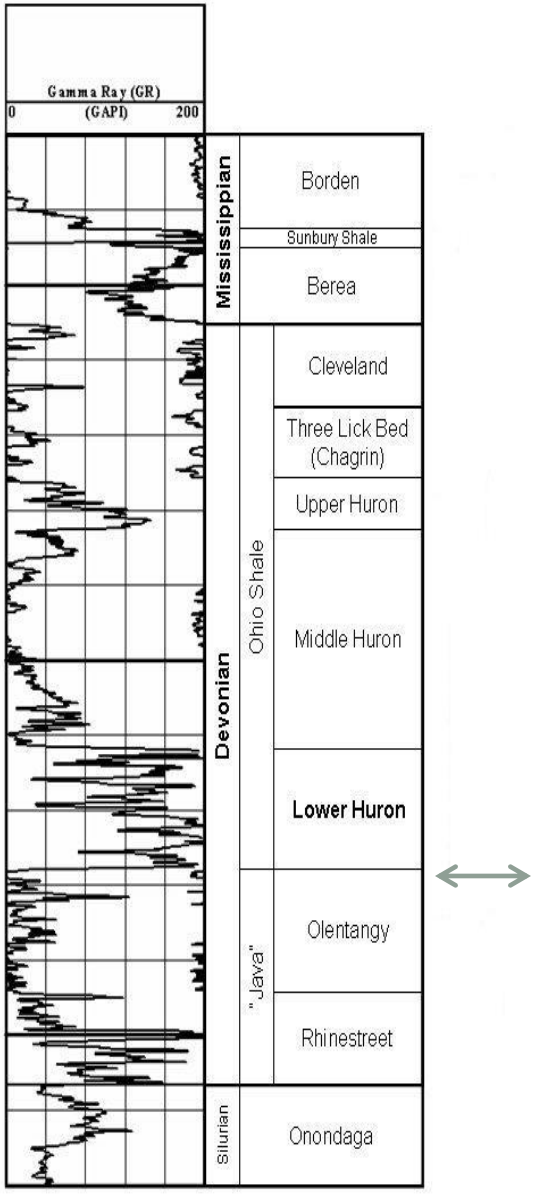
Oil & Gas Industry
SB-186
Outreach Location Sites



June - 2015

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2 **Industry Outreach** **SB 186** **South-Central KY** Barren River State Park—Glasgow, KY Highland Conf. Room 4pm-CST	3 **Industry Outreach-** **SB 186** **Western KY** Audubon State Park Henderson, KY Museum Conf. Room 4pm-CST	4	5	6
7	8 **Industry Outreach-** **SB 186** **Eastern KY** Jenny Wiley State Park-Conf. Room 4pm-EST	9	10	11	12	13
14	15	16	17	18	19	20
21 Father's Day Summer Begins	22	23	24 ***SB-186*** ***Effective Date***	25	26	27
28	29	30		**KOGA Annual Meeting July 14-16**		

Well Definition Change



"Shallow well" means any well drilled and completed at a depth of less than six thousand (6,000) feet or above the base of the lowest member of the Devonian Brown Shale, whichever is the deeper in depth.

"Deep well" means any well drilled and completed below the depth of six thousand (6,000) feet or below the base of the lowest member of the Devonian Brown Shale, whichever is deeper.

Revised Permitting and Bonding Fees

Vertical Wells:

6001'-7000' TVD - $500

7,001 or deeper TVD - $600

Horizontal Wells

10,000' or less TMD - $5,000

10,001' or greater TMD - $6,000

For multilateral - $500 for each lateral

Additional horizontal wells on same pad:

10,000 TMD or less - $3,000

10,001 TMD or more - $4000

WELL PERMITTING AND BONDING FEES TO 4,000 FT. WILL NOT CHANGE

Well Depth	Bond Amount
0 to 500 feet	$500.00
501 feet to 1,000 feet	$1,000.00
1,001 feet to 1,500 feet	$1,500.00
1,501 feet to 2,000 feet	$2,000.00
2,001 feet to 2,500 feet	$2,500.00
2,501 feet to 3,000 feet	$3,000.00
3,001 feet to 3,500 feet	$3,500.00
3,501 feet to 4,000 feet	$4,000.00

Bond Schedule:

Bonds posted for deep wells are for plugging and reclamation

Bonds posted for shallow wells are for plugging only

4,001 feet *to 4,500 feet* $5,000.00

4,501 feet to 5,000 feet $6,000.00

5,001 feet to 5,500 feet $7,000.00

5,501 feet to 6,000 feet $8,000.00

Individual Bond:

Vertical deep wells – $25,000

Horizontal deep well – $40,000

Oil and Gas Conservation Commission may establish higher bond for any individual well based on projected costs to plug well and reclaim well-site

Blanket Bond:

1 to 10 vertical deep wells - $200,000

1 to 10 horizontal deep wells - $320,000

High-Volume Horizontal Hydraulic Fracturing

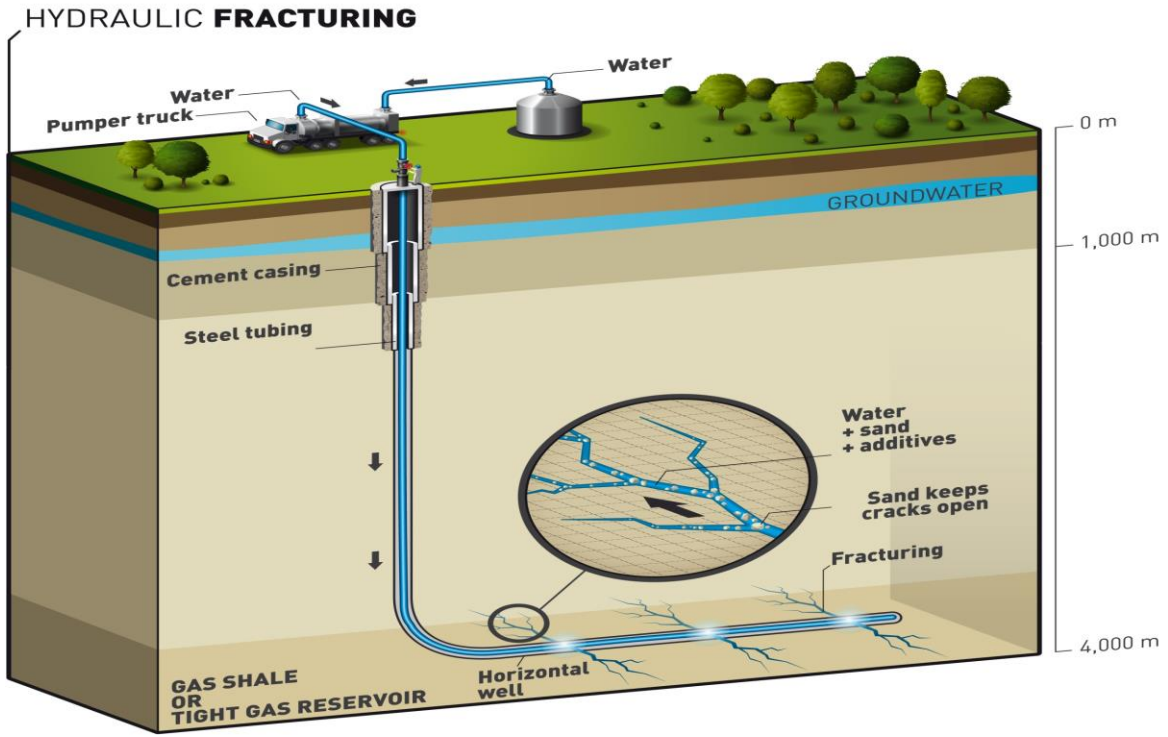
Defined as a stimulation treatment of a horizontal well injecting more than 80,000 gallons of fluid per stage or 320,000 gallons of fluid in total aggregate.

High-Volume Hydraulic Fracturing Treatment Land Owner Notice Requirements

- Well operator shall provide prior notice to each surface owner within 1,000 ft. of the wellhead at least 20 days prior fracturing treatment
- Notice requirements: Name and address of well operator, surface location of wellhead, name and location of the cabinet office where permits and other documents can be viewed

Fluid Disclosure

- Within 90 days of horizontal HVHF, operator must submit chemical disclosure registry form
  GWPC – FracFocus.org
- Trade secret claims must be submitted to the director
- Director may release information to medical personal if needed for diagnosis or treatment or in the treatment of an emergency spill



Surface Water Impoundment or Groundwater Testing Requirements

- Baseline water tests 20 days prior to performing a **deep** horizontal, high-volume fracturing stimulation treatment within 1,000 ft. of the wellhead
- Water test taken from same source 3 to 6 months after fracturing treatment
- Conducted by certified laboratory
- Completion of form ED-40 including water components listed below:

Water Component Parameters		Percentage (%)	Mg/L or PPM	Water Component Parameters		Percentage (%)	Mg/L or PPM
Chloride				Arsenic			
Iron				Calcium			
Magnesium				Chromium			
Total Dissolved Solids				Mercury			
Dissolved Gases	Methane			Silver			
	Ethane			Selenium			
	Propane			Cadmium			
pH				Lead			
Conductivity				Manganese			
(BTEX) Volatile Organic Compounds	Benzene			Barium			
	Toluene			NORM (Radio-Nuclids)	Alpha		
	Ethylbenzene				Beta		
	Xylene						
Surfactants							
Sulfate							

Abandoned Storage Tank Reclamation Program Created by SB 186

Any storage tank facility that is not being actively used and maintained shall be deemed abandoned if:
(a) The cabinet sends written notice, by certified mail, return receipt requested, to the address of the last known owner or operator of the facility or tank or to the registered agent of a corporate owner or operator;
(b) The owner or operator fails to respond within thirty (30) days after receiving the notice indicating the intent to continue to use the tank or facility.

Scope of Abandoned Crude Oil/Brine Storage Tank Problem (estimated 4,400 abandoned sites):

- Degradation of abandoned storage tanks results in leaks of crude oil, sludge (BS) and produced brine from facility, problem will become more pronounced with time.
- Contamination of topsoil adjacent to, and downslope of facility.
- Contamination of surface waters of the Commonwealth.
- Possible contamination of fresh-water aquifer.
- Reduces value of property for land owners, impacts agricultural activities

SB 186 grants authority to Division to:

- Inspect and prioritize abandoned facility as to adverse impact to health, safety and environment.
- Contract and supervise the removal of tanks and associated production facilities and reclaim site.
- Provides for cost recover of last known facility operator.
- No current funding mechanism.

Well-site Reclamation

Currently, KRS 353.5901 requires reclamation plans (ED-10) on oil and gas well-sites drilled on severed mineral tracts; 805 KAR 1:170 requires well operators to the following on ED-10:

- Description of areas to be disturbed including access roads, well pad, pits, gathering lines and storage tank(s).
- Identify steps to prevent erosion of and sedimentation from all disturbed areas including roads and well-site.
- Proposed vegetation mixtures for well-site reclamation.

SB 186 and 805 KAR 1:170 requires an Operations and Reclamation Plan (Revised ED-10) for all access roads and well-sites.

Incorporates best management practices (BMP's) which are demonstrated practices intended to control site run-off and pollution of surface water and groundwater to prevent or reduce the pollution of waters of the Commonwealth. BMPs are vegetative, structural, or managerial practices used to protect soil and water resources as well as adjacent properties, specific conditions of a site will dictate which BMPs are appropriate and used in an integrated system to protect water quality. The BMP's are to be identified and described in the operations and reclamation plan to include the following categories:

- Construction methods to be utilized on the access road and well-site to control run-off;
- Erosion control measures ;
- Reclamation methods to be used after well completion;
- Maintenance (regular inspection of BMP's), sediment removal accumulated in diversion ditches check dams and silt fences, and vegetation mixtures to establish vegetation of the reclaimed site during the productive cycle; and
- Site closure describing plugging, abandonment, and final reclamation procedures.

- ❑ Other regulatory changes will include additional mapping requirements with the Plan including utilities near the access road (100 ft) and wellhead (500 ft) , water features and drainage patterns.

Mediation will continue to be available under SB 186 but limited to wells drilled on severed mineral tracts

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF MINES AND MINERALS
DIVISION OF OIL AND GAS
PO BOX 2244
FRANKFORT, KY 40601
PHONE (502) 573-0147

PLAN TO PREVENT EROSION OF AND SEDIMENTATION FROM A WELL SITE

Operator Name: _____ County: Pike

Surface Owner Name,
Address and Phone No.: McPeek Realty, L.L.C.
P.O. Box 363
Dorton, KY 41520
606-477-2012

Well No. 570134

A narrative description of the location of all areas to be disturbed, including the location of roads, gathering lines, the well site, tanks and other storage facilities:
(Must be typed)

From intersection of Rt. 23 and Rt. 119, take Rt. 23 South approx. 13.9 miles, turn right on Rt. 1469, go 2.8 miles, turn right on Rt. 610, go 9/10 mile, turn left on Rt. 122, go approx. 1.9 miles, turn right on Arnold Fork, go about 3/10 mile, turn right on old coal haul road, go 200 feet, go thru gate, go approx.. 6/10 mile at hollow fill area, turn sharp right on old reclaimed strip bench and old auger bench, go approx. 2/10 mile, bear left up hill on new well road, approx. 400 feet to well site on point.

Describe steps to be taken to prevent erosion of and sedimentation from the well site and all disturbed areas, including roads:
(Must be typed)

Drainage and sediment control on the access road and drill site will be controlled by grading, ditches, culverts and/or any combinations thereof. If, during the construction of the well site, we determine that additional controls (pipes, sumps, rock, etc.) would be necessary for sediment and/or additional drainage control, those appropriate solutions will be installed as needed. Upon completion of the drilling of the well(s) and associated operations, the disturbed area(s) will be regarded and seeded with the revegetation treatment below, a pasture mixture or another appropriate mixture.

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SEP 30 2014
DIVISION OF OIL & GAS

Proposed Revegetation Treatment:

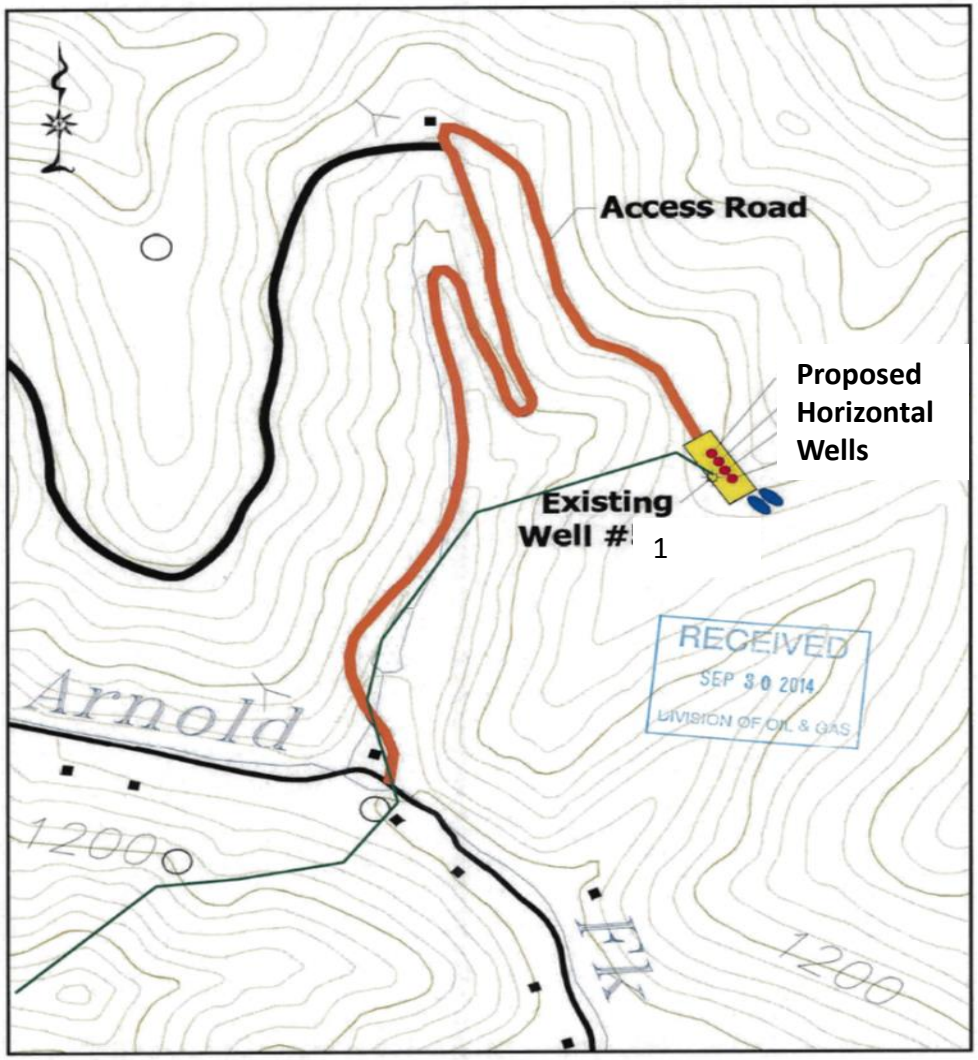
	Fertilizer and Soil Amendments	Seed or Trees Planted (Type and Amount/Acre)	
Area I		25# Fawn Fescue	4# Birdsfoot Trefoil
		10# Orchard Grass	3# Med. Red Clover
		7# Perennial Rye	1# Red Top Grass Seed
		5# Annual Rye	10# Millet
Area II			

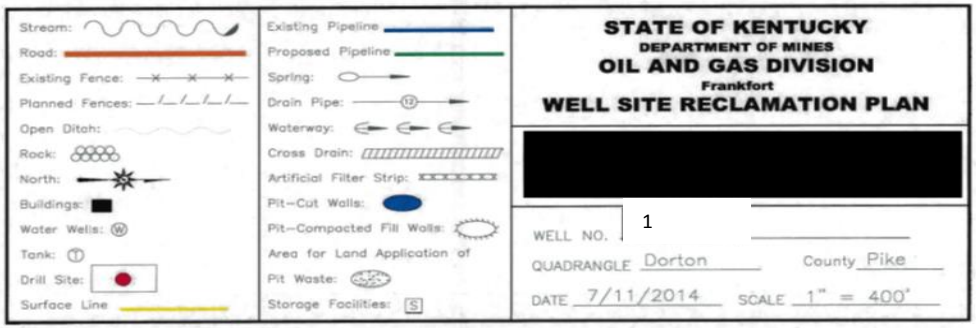
Additional sheets may be attached for your convenience.
FORM #ED-10 (Org.2-27-97) (REV. 2-99)

OVER

Attach: Drawing(s) of the road, well location and proposed area involved, drawn over an enlarged section of the U.S.G.S. 1=24,000 topographic map (enlarged to approximately 1"= 400') on an 8 X 14 sheet using the applicable symbols from the

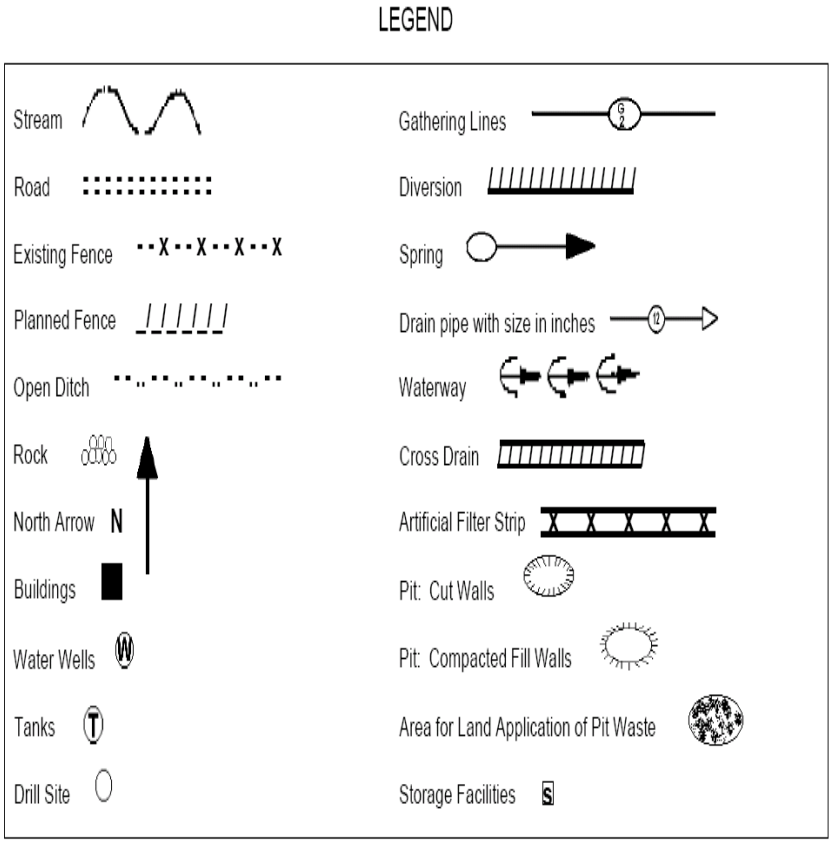
ED-10 Reclamation Plan
Use current ED-10 until
805 KAR 1:170 (late Aug.)





Reclamation Plan Map

Currently required for permits on severed mineral tracts



Well-site Reclamation Phases

- **Site Planning** (Considerations)
  - Topography (Avoid steep slopes, minimize amount of disturbed area)
  - Identify all streams/waterways **(Karst features)**
  - Drainage patterns identified for runoff control
  - Formulate Erosion and Sedimentation Control Measures to be implemented
- **Construction**
  - Access road should be crowned and minimum 12-14 ft. wide, kept below 10% grade, greater in short distances.
  - Access road stabilized with crushed stone or gravel
  - Access road-Install diagonal water bars (water breaks or cross drains), side drainage ditches and culverts (30^0 angle downgrade) within natural drainage to control runoff and prevent erosion.
  - Install sediment barriers (silt fences, hay bales) where soil loss may occur
  - Timber cut (for landowner) or stacked below access road to riprap
  - Diversion ditches constructed to above cut slopes
  - Construct pits in stable portion of well-site (non-fill areas)
- **Reclamation after well completion**
  - Establish native species vegetation (seed and mulched) as soon as possible on well-site, access road berms and all slopes.
  - Remove all fluids from pit (evaporation, Class II-D, land application)
  - Consider installation of gates to keep unauthorized vehicles out (based on landowner approval)
- **Maintenance of reclaimed well-site and access road (production phase)**
  - Monitor access road and well-site for excessive erosion or runoff issues, check culverts and ditches for debris, sediment removal.
  - Have well tenders check sediment accumulation after significant rainfall.
- **Site closure**
  - Remove all equipment from the site, restore the natural drainage patterns and remove sedimentation ponds, or other control facilities.
  - Round or shape all disturbed areas to conform the site to adjacent terrain.
  - All unstabilized areas should be scarified, limed, fertilized, seeded and mulched.
  - Establish permanent vegetation.
  - Confer with landowner for future land use.

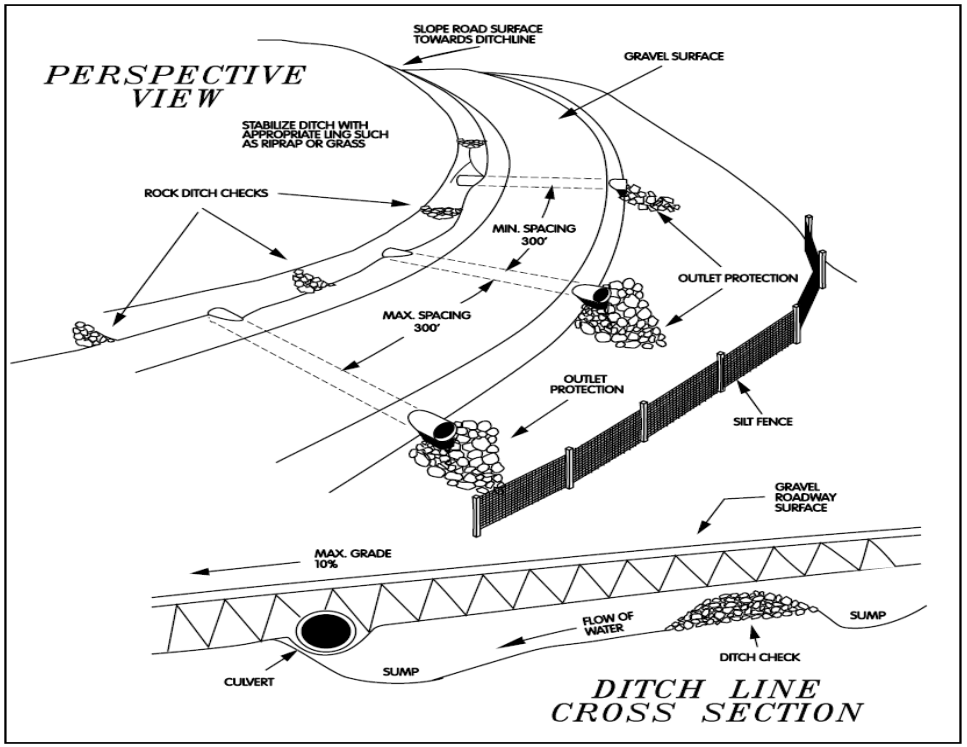
❖ **Transfers**

✓ Requires purchasing party to submit letter with Transfer form (ED-13) assuming wellsite reclamation responsibilities.

Best Management Practices (BMP's) Segments-

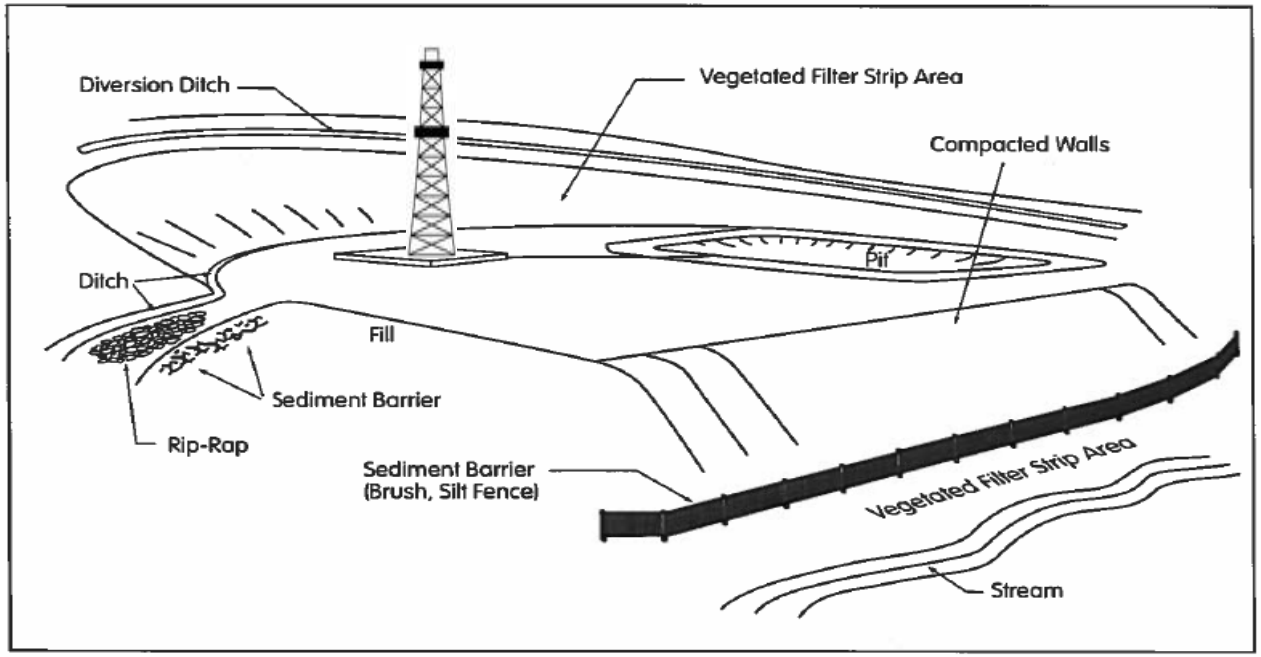
- **Erosion Control-**Gradual wearing away of soils by the action of water and wind. Protection of bare soils from the wearing effects of water and wind, especially topsoil, decreases sediment loss.
  - Vegetation
  - Rock check dams
  - Silt Fences
  - Vegetation
- **Water Runoff control**
  - Diversion, water bars, culverts, broad-based dips
- **Sediment Control-**A temporary restriction or containment barrier across a slope, at the toe of a slope, or at drainage outlets designed to trap sediment from a disturbed area by retarding and filtering water runoff.
  - Filter strips (undisturbed vegetation between road and stream)
  - Silt Fences
  - Brush riprap
  - Composite filter sock
  - Straw bales

Each site selected for oil and gas well development has individual characteristics (e.g., topography, soils and vegetation) that must be considered in the development of an **Erosion and Sediment Control Plan**. Effective erosion and sediment reduction requires careful planning and design in addition to proper installation and proper maintenance of the best management practices. Operators are cautioned to develop the plan with the specific best management practices (BMPs) that are required for that individual site or project, and not to provide a recitation of general good practice techniques.

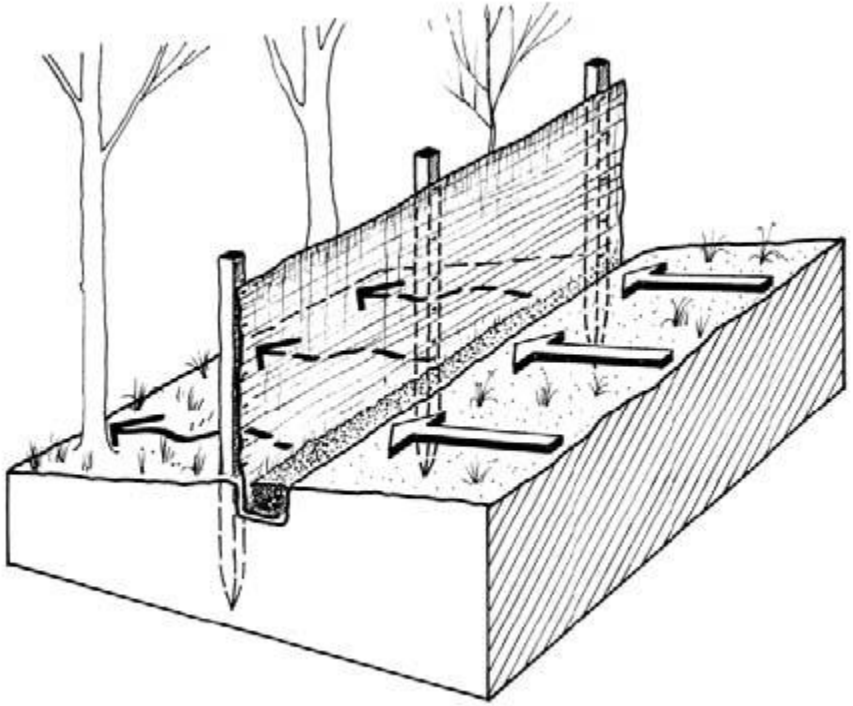


Access road diagram with BMP's

Well-site diagram with BMP's



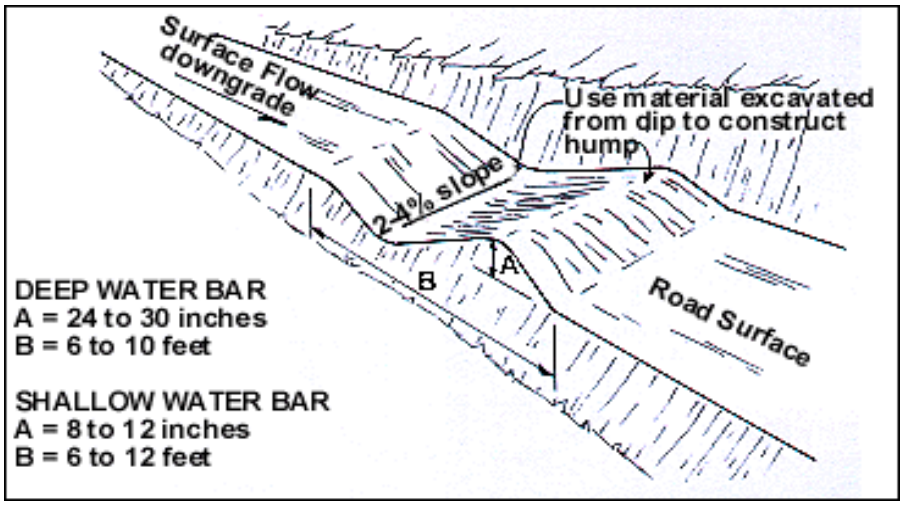
Silt Fence – Silt fence is an erosion and sediment-trapping feature utilizing a geo-textile fabric, incorporating topography and sometimes vegetation to cause sediment deposition.



Improperly constructed silt fence

Excessive sedimentation from access road entering stream channel

Water bars are channels, ditches or small berms constructed diagonally across access road to intercept surface water and diverts it from the road.



Composite filter sock

Scarification is accomplished driving a dozer or other tracked vehicle perpendicular to the slope. Roughening also produces a soil surface more suitable for the growth of vegetation because it will hold the seed and retain moisture.

Drainage Ditch directs surface water flow

Rock Check Dams reduce the velocity of concentrated flows, thereby reducing erosion within the ditch in areas that will not be moved.

Culvert with silt fence and straw bales

Temporary Rolled Erosion Control Products (Erosion Control Matting) – These products reduce soil erosion and assist vegetative growth by providing temporary cover from the erosive action of rainfall and runoff while providing soil-seed contact.

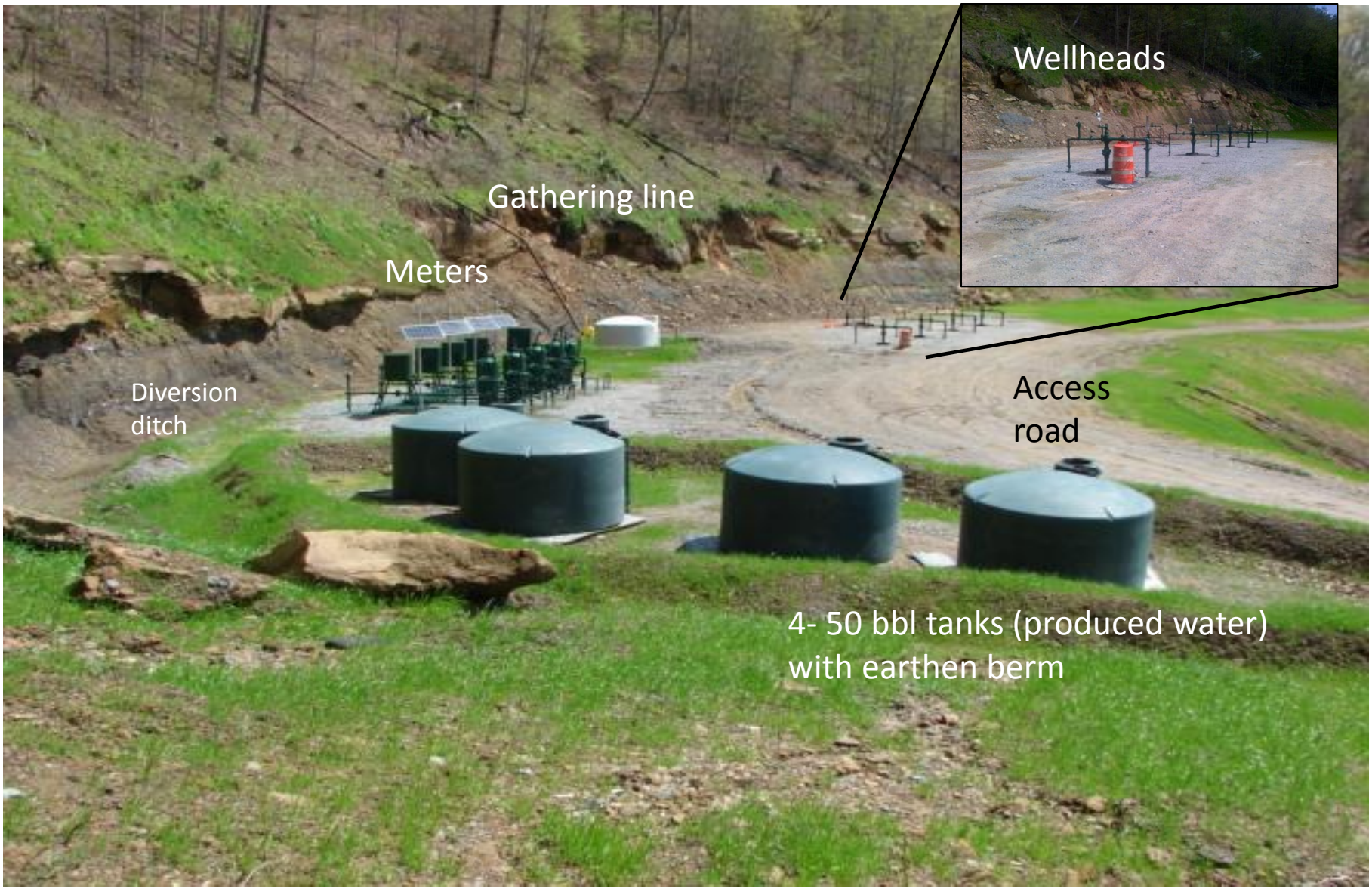
Access road with erosion control matting, silt fence and logs riprap

Culverts are installed for surface water runoff management from ditches and under roads at natural drainage or stream crossings.

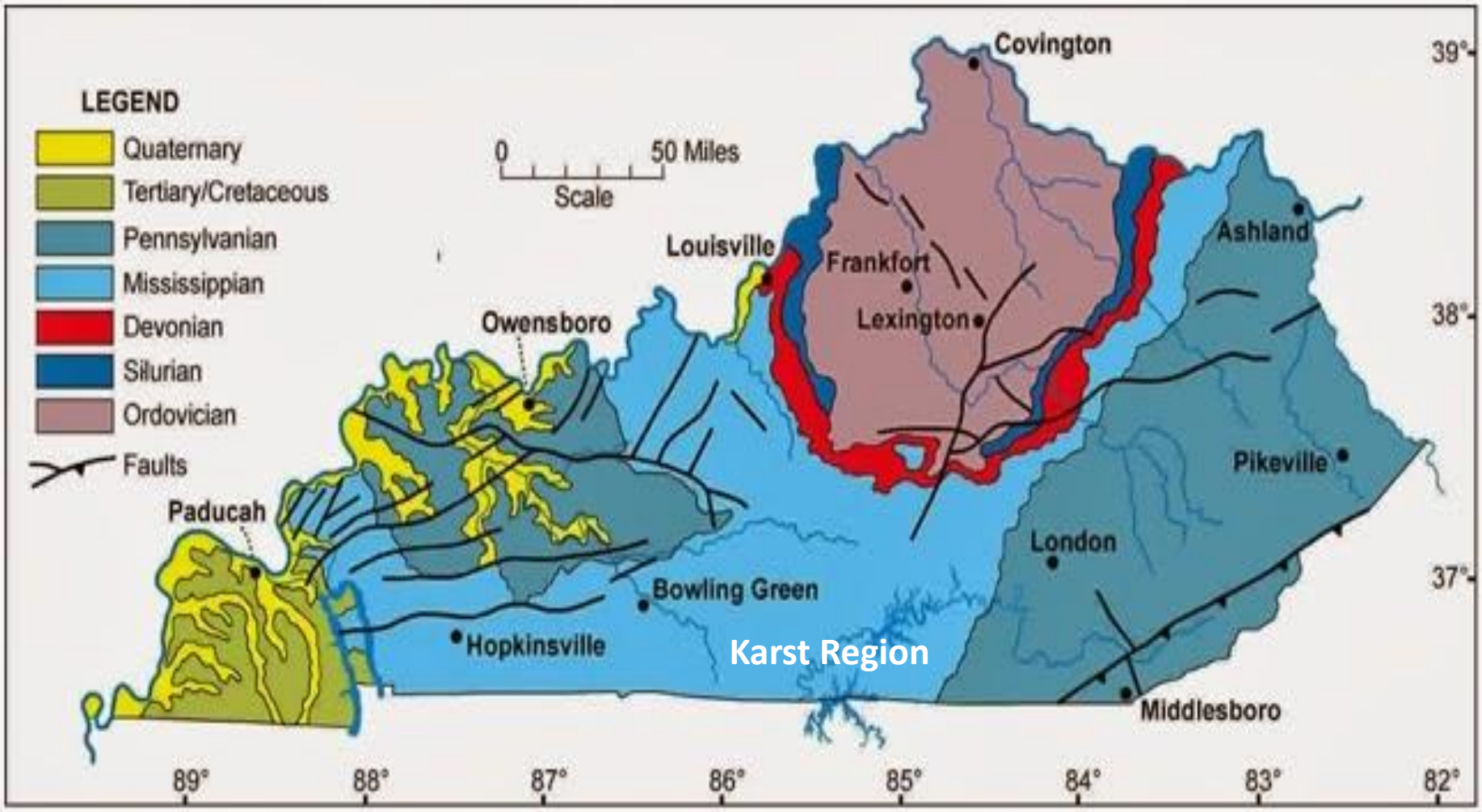
Stream-crossing culvert

Well access road culverts

5-Well Pad - Floyd Co., KY
Site reclaimed, vegetation established

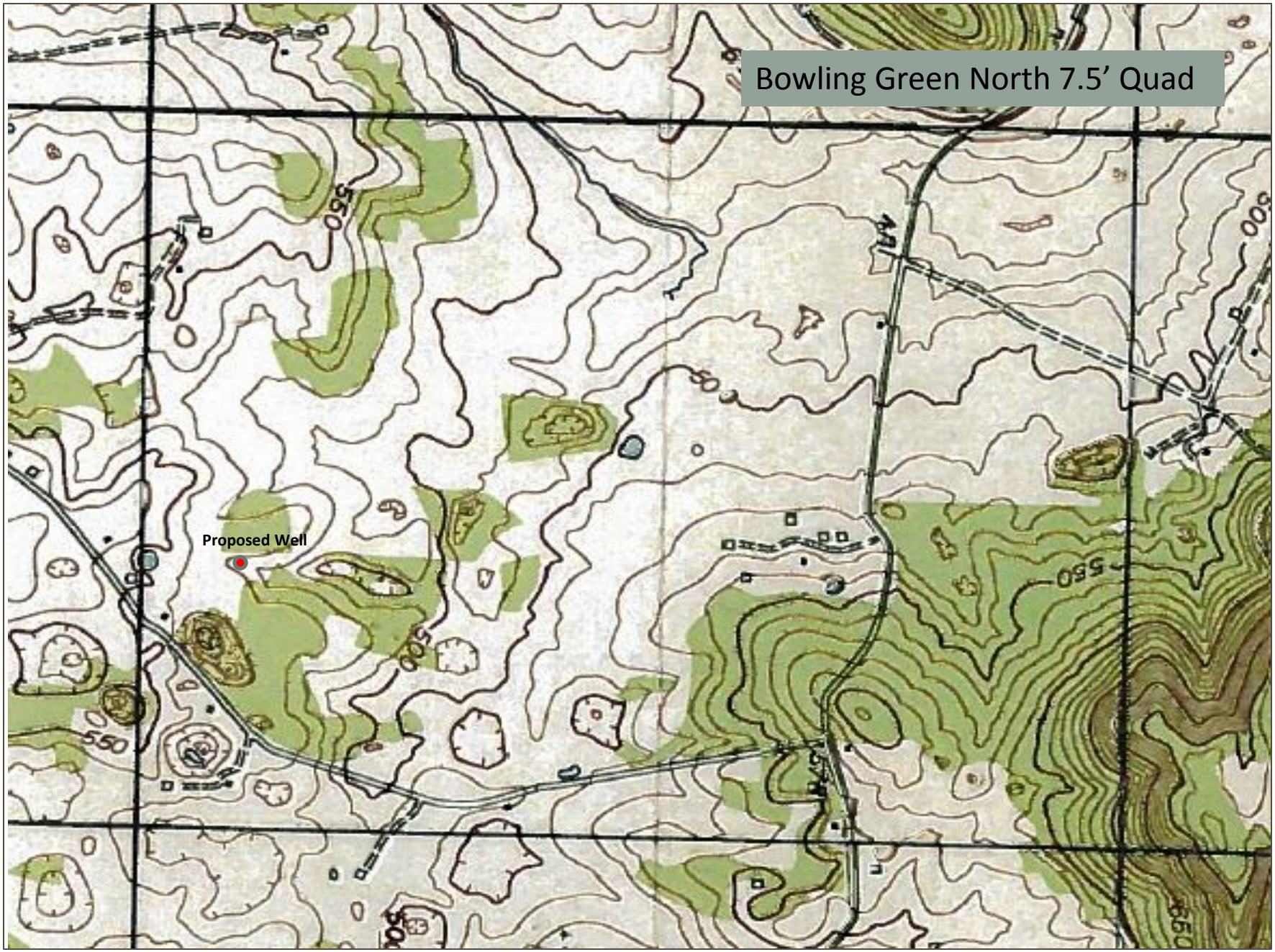


Karst BMP's


LEGEND
Quaternary
Tertiary/Cretaceous
Pennsylvanian
Mississippian
Devonian
Silurian
Ordovician
Faults
0
50 Miles
Scale
Covington
Louisville
Frankfort
Lexington
Ashland
Owensboro
Pikeville
Paducah
London
Bowling Green
Hopkinsville
Karst Region
Middlesboro
39°
38°
37°
89°
88°
87°
86°
85°
84°
83°
82°

Karst BMP's

- Review area to be disturbed to identify sinkholes (use 7.5' topographic maps) and buffer zones.
- The buffer zone is the vegetated area immediately surrounding the karst feature, which helps slow runoff and filter out pollutants that might enter karst systems. A buffer zone of at least a 100-foot radius should be maintained on all sides around caves, sinkholes and springs.
- Maintain as large a vegetated zone as possible on drainage ways and slopes to slow runoff and filter out pollutants.
- Slow runoff by building check dams across ditches and using vegetated sinkholes to naturally detain water and allow soil and pollutants to settle out.
- Keep soil on site during construction by using silt fences, hay bales, and sedimentation basins.
- Reseed and mulch areas of exposed soil as soon as possible to reduce erosion.
- Use gravel or permeable paving materials which allow rain to penetrate the surface rather than running off directly into a stream or sinkhole.


Bowling Green North 7.5’ Quad
Proposed Well
550
500
550
550

Reclamation Plan in Floodplains

Reference in Narrative

- Well location subject to periodic or seasonal flooding
- Pumping unit will be placed on platform
- Access will be maintain for well operation.

RECOMMENDED HERBACEOUS MIXTURES FOR REVEGETATION

Note: A species enclosed in parenthesis may be substituted for the species to the left. Its seeding rate is enclosed in parenthesis.

Species Mixture	Seeding Rate (Pounds/acre PLS)
Spring - February 15 to May 15	
1. Orchardgrass	10
White or Ladino clover	2
Red clover	6
2. Orchardgrass	10
White or Ladino clover	1
Red clover	4
Kobe lespedeza	10
3. Orchardgrass	10
Birdsfoot trefoil (Alfalfa)	8 (15)
Red clover	6
4. Wheat (Spring oats)	25 (32)
Switchgrass	10
Kentucky 31 Fescue	10
Indiangrass	10
Big bluestem	5
Little bluestem	5
Birdsfoot trefoil	6
Except for mixture 4, add one (1) of the following quick cover species to the selected permanent spring seeding mixture:	
Wheat (before April 15)	30
Spring oats (before April 15)	32
Balbo rye (before April 15)	30
Perennial ryegrass	10
Annual ryegrass	5
Weeping lovegrass (after April 1)	2
Summer - May 15 to August 1	
Orchardgrass	10
[~~Korean or~~] Kobe lespedeza [~~or mix of these~~]	15
Red clover	4
White clover (Birdsfoot trefoil)	1 (6)
Alfalfa	12
Add one (1) of the following quick cover species to the permanent summer seeding mixture:	
Sorghum	20
Foxtail (German) millet	12
Japanese millet	15
Soybeans	40
Cowpeas	40
Pearl millet	10
Fall - August 1 to October 1	
1. Orchardgrass	10
White or Ladino clover	2
Red clover	6
2. Orchardgrass	10
Alfalfa (Birdsfoot trefoil)	15 (8)
Red clover	6
3. Deertongue	12
Birdsfoot trefoil	8
Red clover	6
Add one (1) of the following quick cover species to the selected permanent fall seeding mixture:	
Winter wheat	30
Balbo rye or Winter rye	30
Winter oats	32
Perennial ryegrass	10
Annual ryegrass	5
Mixtures for Wet or Poorly Drained Areas and Pond Borders	
Spring - February 15 to May 15	
Japanese millet	10
Redtop (Reed canarygrass)	3 (15)
Alsike clover	4
Common annual lespedeza (quick cover species)	10
Fall - August 1 to October 1	
Redtop	3
Reed canarygrass	15
Alsike clover	6
Common annual lespedeza (quick cover species)	10
Mixture for Areas to be Stocked With Woody Plants	
Spring or Fall Seeding	
Redtop	3
Perennial ryegrass	5
Birdsfoot trefoil (Appalow lespedeza)	10 (20)
Foxtail millet (quick cover species)	5
If both Appalow lespedeza and birdsfoot trefoil are used, cut their seeding rates in half.	

Division of Oil & Gas
oilandgas.ky.gov
(502) 573-0147

June 24, 2015

- **Permit Application**
- **3-Well Plats**
- **ED-10**
- **Map of Wellsite/Access Road**